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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,512	08/19/2003	Timothy W. Kaufmann	DP-307433/DP-309396	4499

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EXAMINER	
BASINGER, SHERMAN D	
ART UNIT	**PAPER NUMBER**
3617	

DATE MAILED: 03/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/643,512	KAUFMANN ET AL.	
	Examiner	Art Unit	
	Sherman D. Basinger	3617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 January 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-92* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,9,10,13,14,20,21,28,31,38-44,52-54,57,58,67,68,70,71,77,78,81,91 and 92* is/are rejected.

7)☒ Claim(s) *3-8,11,12,15-19,22-27,29,30,32-37,45-51,55,56,59-66,69,72-76,79,80 and 82-90* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *1/3/05&8/19/03* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/15/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *IDS of 1/3/05*.

DETAILED ACTION

Claim Objections

1. The following claims are objected to because of the following informalities: see below. Appropriate correction is required.

In claim 2, lines 2 and 3, "said rudder control system" has no clear antecedent.

In claim 23, line 2 "said damping torque command signal" has no clear antecedent.

In claim 26, last line "said variable steering ratio signal" has no clear antecedent.

In claim 32 "said position command signal" of the next to the last line has no clear antecedent.

In claim 34, lines 2 and 3, "said rudder control unit" and "said position command signal" have no clear antecedents.

In claim 38, line 1 "The storage medium" has no clear antecedent. –A storage medium- is suggested.

In claim 39, line 1 "The computer data signal" has no clear antecedent. –A computer data signal- is suggested.

In claim 40, line 9 a comma should be inserted after "signal".

In claim 43, lines 2 and 3 "said rudder control system" has no clear antecedent.

In claim 44, line 2 a comma should be inserted after "signal".

In claims 68-90, all of which now depend from claim 67 directly or indirectly, "The method for steering a watercraft" of line 1 should be changed to –The method for directing a watercraft" as is claimed in line 1 of claim 67.

In claim 91, line 1 "The storage medium" should be changed to –A storage medium-.

In claim 92, line 1 "The computer data signal" should be changed to –A computer data signal-.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 9, 10, 13, 14, 20, 21, 28, 31, 38-41, 43, 44, 52-54, 57, 58, 67, 68, 70, 71, 77, 78, 81, 91 and 92 are rejected under 35 U.S.C. 102(e) as being anticipated by Andonian et al.

Andonian et al discloses a steer-by-wire system which can be used on a boat-see column 2, line 11. The directional control system is 14. The rudder position sensor of the directional control system is 30.

The helm control system is 12. The helm command signal comes from steering device 32. The operator is 34. The tactile feedback to the operator is provided by 22.

Steering sensor 18 includes the helm position sensor and a torque sensor to produce and transmit a helm position signal and a helm torque signal. (see column 2, lines 15-20).

The watercraft speed sensor would be part of vehicle sensor 40-see column 3, line 44.

The master control unit in operable communication with the speed sensor, the helm control system 12 and the direction control system 14 is controller subsystem 16. The master control unit inherently includes a torque control process for generating a helm command signal 36 based on the helm torque signal, the helm position signal and the watercraft speed signal. See column 3, last 5 lines and column 4, lines 1-14.

With regard to claim 2, the rudder force sensor is part of turning sensor 30. The rudder force sensor would inherently produce and transmit a rudder force signal to which the rudder control system 24 would be responsive through its feed back to the master control unit 16.

The closed loop system of claim 9 includes 32, 18, 20 and 35 of figure 2.

With regard to claim 10, it is inherent that the helm control system 12 is configured to exhibit a bandwidth sufficient to facilitate the torque control process maintaining stability of the watercraft steer-by-wire system; otherwise, the watercraft would not be able to be steered in a safe manner.

With regard to claim 13, it is also inherent that the direction control system 14 is configured to exhibit a bandwidth sufficient to facilitate the position control process to maintain stability of the watercraft steer-by-wire system. Absent this the watercraft

would not be able to be safely controlled leading to possible injury and property damage.

The closed loop control system of claim 14 includes 16, 36, 24, 30 and the feedback from turning sensor 30 to controller subsystem 16.

With regard to claim 20, in Andonian et al, the watercraft speed signal is received from 40, the helm position signal is received from 18, the helm torque sensor signal is received from 18, the rudder position signal is received from 30, the generated helm command signal to a helm control system based on the helm torque signal, the helm position signal and the watercraft speed signal is that shown by the line connecting controller 16 to steering actuator 20, the tactile feedback to an operator is 22 and the generated directional command signal to a direction control system 14 based on the watercraft speed signal, the rudder position signal and the helm position signal is 36.

With regard to claim 21, the rudder force signal is received from 30 and the helm command signal is based on this rudder force signal. Also, the generated direction control command signal 36 is based on the watercraft speed, the helm position signal and at least one of the rudder position signal and the rudder force signal. This is show by the direction of the lines connecting sensor 40, controller 16, turning actuator 24 and turning sensor 30 which senses both rudder angle and torque.

Again, it would be inherent that the generated torque command signal in the helm control system 12 would exhibit a bandwidth sufficient to facilitate a torque control process generating the helm command signal to facilitate maintaining stability of the steering. Absent this, the watercraft would not be able to be controlled leading to both injury and property damage.

Again, it would be inherent that the generated position command signal of the direction control system 14 would exhibit a bandwidth sufficient to facilitate a position control process generating the rudder command signal to facilitate maintaining stability of the steering. Absent this the watercraft would not be able to be controlled leading to both injury and property damage.

With regard to claim 38, it is inherent that the storage medium 16 of Andonian et al is encoded with a machine-readable computer program code for steering a watercraft, the storage medium including instructions for causing a computer to implement a method comprising receiving a watercraft speed signal from 40, receiving a helm position signal from 18, receiving a helm torque signal from 18, receiving a rudder position signal from 30, generating a helm command signal to a helm control system 12 based on the helm torque signal, the helm position signal and the watercraft speed signal to provide tactile feedback 22 to an operator and generating a direction control command signal 36 to a direction control system 14 based on the watercraft speed signal from 40, the rudder

position signal from 30, and the helm position signal from 18 to control direction of the watercraft.

With regard to claim 39, the computer data signal for steering a watercraft comes from controller subsystem 16 which computer data signal includes instructions for causing a computer within subsystem 16 to implement a method
comprising
receiving a watercraft speed signal from 40;
receiving a helm position signal from 18;
receiving a helm torque sensor signal from 18;
receiving a rudder position signal from 30;
generating a helm command signal to a helm control system 12 based on said helm torque signal , said helm position signal and said watercraft speed signal to provide
tactile feedback 22 to an operator; and generating a directional command signal 36 to a direction control system 14 based
on said watercraft speed signal, said rudder position signal, and said helm position signal to
control direction of said watercraft.

With regard to claim 40, Andonian et al discloses a watercraft steer-by-wire control system (see column 2, lines 10-15)

comprising

a direction control system 14 responsive to a directional command signal 36 for steering a watercraft, said direction control system 14 including a rudder position sensor 30 to

measure and transmit a rudder position signal,

a helm control system 12 responsive to a helm command signal for receiving a directional input to a helm from an operator 34 and providing tactile feedback 22 to an operator,

said helm control system including a helm position sensor 18 to produce and transmit a helm

position signal,

a master control unit 16 in operable communication with said helm control

system, and said direction control system;

said master control unit 16 inherently includes a position control process for generating said

directional command signal 36 in response to said helm position signal.

Andonian et al also discloses that the watercraft steer-by-wire control system includes a watercraft speed sensor 40 for producing a watercraft speed signal and wherein said position control process is responsive to said watercraft speed signal.

With regard to claim 43, the rudder force sensor is 30.

With regard to claim 44, the helm torque sensor is part of 18. The master control unit would inherently include a torque control process for generating the helm command signal based on the helm torque signal and the helm position signal received from 18 and the watercraft speed signal received from 40.

With regard to claim 52, that the tactile feedback 22 includes a resistive force is discussed in column 3, lines 42 and 43.

The closed loop system of claim 53 includes 32, 18, 16 and 20.

It is inherent that the bandwidth defined in claims 54 and 57 is exhibited such that the watercraft is controlled and injury loss and personal property loss are not experienced. This is a given. It has to be done in order to control the watercraft.

The closed loop system of claim 58 includes 16, 36, 24, 30 and 16.

With regard to claims 67 and 68, Andonian et al discloses a method for directing a watercraft with a watercraft
steer-by-wire system comprising
receiving a helm position signal from 18;
receiving a rudder position signal from 30;
generating a helm command signal to a helm control system based on said

helm position signal to provide tactile feedback 22 to an operator;

generating a directional command signal 36 to a direction control system 14 based on said rudder position signal, and said helm position signal to control direction of said watercraft

receiving a watercraft speed signal from 40 wherein at least one of

said generating a helm command is further based on said watercraft speed signal and said

generating a directional command signal is further based on said watercraft speed signal.

Andonian et al also discloses for claims 70 and 71

the method for steering a watercraft of

further comprising

receiving a rudder force signal from 30, and wherein said a helm command signal is also based on said rudder force signal;

generating a directional command signal 36 to a direction control system 14 based on said watercraft speed signal from 40, said helm position signal from 18, and at least one of said rudder

position signal and said rudder force signal from 30 and

receiving a helm torque signal from 18 and wherein said generating a

helm command is further based on said helm torque signal.

The resistive force of claim 77 is discussed in column 2, lines 40-45 of Andonian et al.

With regard to claims 78 and 81, it is inherent that the bandwidth defined in theses claims is exhibited such that the watercraft is controlled and injury loss and personal property loss are not experienced.

With regard to claim 91, Andonian et al inherently discloses a storage medium in controller subsystem 16 that is encoded with a machine-readable computer program code for steering a watercraft, said storage medium including instructions
for causing a computer to implement a method comprising
receiving a helm position signal from 18;
receiving a rudder position signal from 30;
generating a helm command signal to a helm control system based on said helm position signal to provide tactile feedback 22 to an operator; and
generating a directional command signal 36 to a direction control system 14 based on said rudder position signal from 30, and said helm position signal from 18 to control direction of said watercraft.
Andonian et al for claim 92 also discloses a computer data signal from control subsystem 16 for steering a watercraft, said
computer data signal including instructions for causing a computer within subsystem 16 to implement a method
comprising

receiving a helm position signal from 18;

receiving a rudder position signal from 30;

generating a helm command signal to a helm control system 12 based on said helm position signal to provide tactile feedback 22 to an operator, and

generating a directional command signal 36 to a direction control system 14 based on said rudder position signal, and said helm position signal to control direction of said watercraft.

Allowable Subject Matter

4. Claims 3-8, 11, 12, 15-19, 22-27, 29, 30, 32-37, 42, 45-51, 55, 56, 59-66, 69, 72-76, 79, 80 and 82-90 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

5. Applicant's arguments filed January 3, 2005 with regard to the claims above rejected with Andonian et al have been fully considered but they are not persuasive. Applicant's in his arguments concerning claim 1 hasn't pointed out the limitation not disclosed by Andonian et al. Applicant does make reference to "said helm control system comprises a closed loop control system responsive to said helm command

signal and said helm torque signal"; however, this limitation does not appear in claim 1. Further, the closed loop is clearly shown in figure 2 by the lines connecting the steering device 32, the steering sensor 18, the subsystem 16 and the steering actuator 20. While the specification does not discuss this closed loop, the drawing clearly shows it.

Applicant argues the following:

Second, it is noteworthy to appreciate that the helm command signal 36 is generated in the master control unit 16 and sent to the helm control system 12. This is not taught in the cited reference. Thus, the signal that is claimed as the helm command signal is not equivalent to the signal depicted in Figure 2 of Andonian. Furthermore, the Office Action is silent as to which signal of Figure 2 of Andonian the Examiner considers to be the equivalent of the helm command signal 36 as claimed.

The helm command signal is represented in Andonian et al by the arrow connecting subsystem 16 to the steering actuator 20. This line is un-numbered, but it is the equivalent of signal 36 of the invention.

With regard to the bandwidth arguments, that the steer-by-wire system of Andonian et al exhibit these claimed bandwidths is a "must". Absent this, the watercraft will not be able to be controlled.

6. In view of applicant's arguments presented January 3, 2005 and the amendment to the specification and drawings, the rejection of claims 42, 49, 69 and 75 under the first paragraph of 35 U.S.C. 112 have been withdrawn.

7. In view of applicant's arguments presented January 3, 2005, the rejection of claims 40, 67, 91 and 92 with Dimmick et al and the rejection of claim 67 with Cognevich, Sr. et al have been with drawn.

8. While a rejection under the second paragraph of 35 U.S.C. 112 is not set forth in the instant office action, note paragraph 1 above.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Applicant stated in the response filed January 3, 2005, page 31 that "no amendments as presented alter the scope of the claimed invention and therefore cannot necessitate a new grounds of rejection". This statement is incorrect. The scope of claims 41-66 and 68-90 has been changed by changing their

dependency. Further, the scope of claims 52 and 77 have been changed by stating as one of the at least one of "a resistive force". Therefore, in some instances a new grounds of rejection is necessitated.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sherman D. Basinger whose telephone number is 703-308-1139. The examiner can normally be reached on M-F (6:00-2:30 ET)/5:30-2:00(after 4/11/05).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samuel J. Morano can be reached on 703-308-0230. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

2/23/05

Sherman D. Basinger
Primary Examiner
Art Unit 3617

2/22/05